



WIZARD PLUS

Torque and Force Analyzer



Operating Instructions

Version 3 + Version 3 'Super'
September 2004

WIZARD PLUS - Contents

Contents	1.1
Software Installation	1.2
Screen Layout	1.3
Quick Start Guide	2.1 - 2.2
Transducer - Auto Recognition	3.1
Transducer - Add New – Manual Configuration	3.2
Transducer - Manual Selection	3.3
Transducer - Edit / Delete	3.4
Transducer - Calibrate	3.5 - 3.6
Tool - Add New	4.1 – 4.2
Tool - Select	4.3
Tool - Edit / Delete	4.4
Units of Measurement	5.1
Modes of Operation	6.1
Track Mode	6.2
Peak Mode	6.3
Peak Graph	6.4
1st Peak Mode	6.5
1st Peak Graph	6.6
Power Tool Mode	6.7 - 6.14
Test Mode	7.1
SPC Test	7.2 – 7.6
ISO 6789 Test	7.7 – 7.9
MountzTorque Data	7.10 - 7.11
Filter Setup	8.1
Sleep / Sleep Setup	8.2
Graph Setup	8.3
Auto Save / Clear Time	8.4
1st Peak Sensitivity	8.5
Password Configure	8.6
ISO 6789 Setup	8.7
Information	8.8
Appendix 1 - WIZARD PLUS CF2 Card Calibration	9.1
Appendix 2 - Troubleshooting	9.2

WIZARD PLUS - Software Installation



WIZARD PLUS software can be installed on a:

- Desktop PC, which is equipped with a PCMCIA type 2 slot
- Laptop PC, which is equipped with a PCMCIA type 2 slot
- PDA (Personal Digital Assistant), which is equipped with a CF Card slot



If installing on a PDA, follow these instructions only *after* Microsoft® Activesync has been successfully installed on your PC and your PDA has synchronised.

Ensure all other applications on the host computer are closed, particularly Microsoft Excel.

- Insert CD-ROM into PC and follow the installation instructions on screen..

If the CD-ROM does not auto-start:
Click **S**tart
Click **R**un...
Type "**D:SETUP.EXE**" (without the quotation marks) where D is the drive letter of your CD-ROM drive.
Click OK to start the installation.
- Once the WIZARD PLUS software has successfully installed, follow the instructions "**Quick Start Guide**" in section 2 of the manual.

Also see

Screen Layout - Page 1.3

Quick Start Guide - Pages 2.1 - 2.2

WIZARD PLUS – Screen Layout

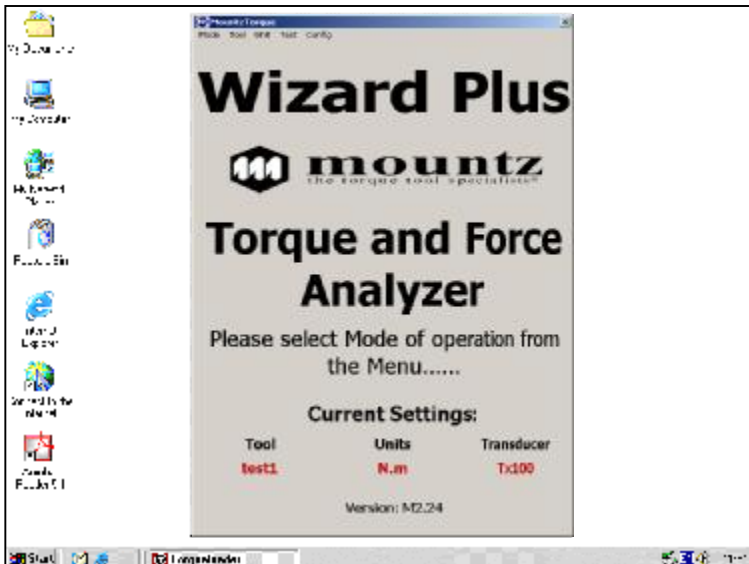


The position of the WIZARD PLUS Menu differs between the PDA(PocketPC) and PC (Windows) versions.

WIZARD PLUS for PDA - PocketPC Format

- WIZARD PLUS Screen fills complete PDA display
- WIZARD PLUS Menu at foot of screen.

Mode Tool Unit Test Config



WIZARD PLUS for PC/Laptop - Windows Format

- WIZARD PLUS Screen is displayed as a window.
- WIZARD PLUS Menu at top of window.

Mode Tool Unit Test Config

Note: All operating functions of the WIZARD PLUS software are identical in all versions.

Also see: **Quick Start Guide** - Pages 2.1 - 2.2



Ensure that the **WIZARD PLUS** software has been successfully installed using the instructions found on the **Software Installation Card** or the **Software Installation** page of the manual.

Starting WIZARD PLUS

- Ensure that the **WIZARD PLUS CF2 Card** is in the card slot of the PDA or PC.
A PCMCIA Adaptor may be required.

PDA: From the Start Menu select **WIZARD PLUS**

PC: From the **Start** Menu select '**Programs**' then '**MountzTorque**'. Select **WIZARD PLUS** from the menu.

Alternatively, use the WIZARD PLUS shortcut from the desktop.

Note: The WIZARD PLUS software will not operate without the WIZARD PLUS CF2 Card in place.

Exiting WIZARD PLUS

WIZARD PLUS can be exited from most screens. Press the 'OK' or 'X' button in the Top Right Corner of the display.

Press 'Yes' to confirm exiting the application.



Continued on **Next Page**

WIZARD PLUS – Quick Start Guide - 2

Continued from **Quick Start Guide - 1**

After Starting WIZARD PLUS

- Connect Transducer to CF2 Card using Transducer Lead.

If the transducer connected is a Torqueleader 'QuickTec' or Norbar 'SMART', it will be automatically recognised by WIZARD PLUS. The message "New Transducer detected! Add to Database?" will appear. Press 'Yes'

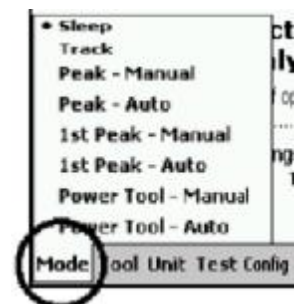
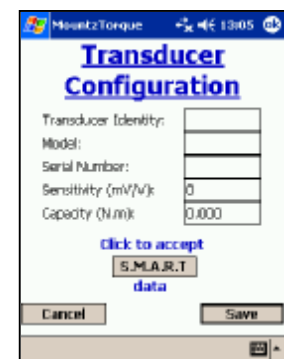
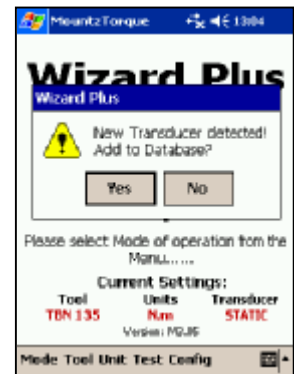
If this message does not appear, the transducer must be configured manually – see page 3.2

A password will be required at this point.

The Master Password within WIZARD PLUS is **MOUNTZ** (this is case sensitive).

This should be changed at the earliest opportunity.

- On the Transducer Configuration screen, press the QuickTec' or 'SMART' Button to populate the Model, Serial Number, Sensitivity and Capacity boxes.
- Enter a unique name in the Transducer Identity box. The field size is 10 characters.
- Press Save to store data.
- The message 'Would you like to add another Transducer? Appears. If 'Yes', connect the Transducer and repeat steps 1-4.
- Select a **Mode** from the WIZARD PLUS Menu. WIZARD PLUS is now ready to take readings.



Also See **Add New Tool** - Page 4.1



The WIZARD PLUS System will automatically sense when a suitable 'intelligent' Transducer has been connected.

Suitable Transducers are the Torqueleader 'QuickTec' series and the Norbar / Torqueleader 'SMART' type.

- Connect the Transducer to the CF2 Card

New Transducers

- If the Transducer is new to WIZARD PLUS, a 'New Transducer Detected!' message will appear. This Transducer can then be configured and saved. See page 2.2



Previously Configured Transducers

- If the transducer has been previously configured and saved within the WIZARD PLUS system, a message will be displayed showing the identity of the Transducer.
- With no load on the Transducer, Select 'OK'



Note:

Always ensure that there is no load on the transducer when it is selected
– Remove any tool that may be interfaced.

WIZARD PLUS – Transducer Add New – Manual Configuration



Ensure that the 'WIZARD PLUS CF2 Card' is in the card slot of the PDA or PC and the correct Transducer is connected using the Transducer Lead.

- From the WIZARD PLUS Menu select **Unit**
- Then select the Unit of Measurement as used on the Transducer's Calibration Certificate.
- From the WIZARD PLUS Menu select **Config**
- From the **Config** menu select **Transducer** then **Add New**. A password may be required at this point.
- On the Transducer Configuration screen enter a name in the Transducer Identity box. This is the unique name that will identify this transducer throughout WIZARD PLUS.
It is suggested that the name describes the capacity and the type of transducer (static, rotary, force etc). ie 'Static 25' or similar.
The field size is 10 characters.
- Enter the Serial Number, Sensitivity (mV/V) value and the capacity (maximum range) exactly as found on the calibration certificate for the transducer. All boxes must be completed.
- Press **Save** to store data.
- The message 'Would you like to add another Transducer? Appears. If 'Yes', connect the Transducer and repeat steps 5-8.

Transducer Configuration Menu

Transducer Configuration

Transducer Identity:

Model:

Serial Number:

Sensitivity (mV/V):

Capacity (N.m):

Cancel Save

The number of Transducer details that may be saved is only limited by the memory capacity of the PC or PDA

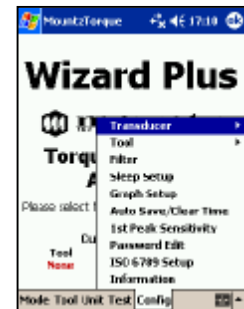
WIZARD PLUS – Transducer – Manual Selection



If the transducer connected is not 'QuickTec' or SMART compatible, it must be manually selected before use.

- Connect the chosen transducer to the '**WIZARD PLUS CF2 Card**' using the correct Transducer Lead
- From the WIZARD PLUS Menu select **Config** then **Transducer**. A password may be required
- From the Transducer menu choose **Select** then pick the required transducer from the list of those configured.
- The Transducer list is searchable – type the start of the transducer description in the 'Find a Transducer' box.

The currently selected Transducer is highlighted with a pair of red lines on the Transducer List.





Ensure that the correct Transducer is selected before Editing or Deleting.

Edit Transducer

- From the WIZARD PLUS Menu select **Config** then **Transducer**. A password may be required at this point.
- From the Transducer menu choose **Edit** then select the required transducer from the list of those configured.
- All details may be edited with the exception of the Serial Number. If the Serial Number needs to be changed, the Transducer must be deleted and re-entered.
- On the Transducer Configuration screen, the Sensitivity (mV/V) can be edited. This may be necessary following a re-calibration.
- Press **Cancel** to cancel changes or **Save** to update the information.

Transducer Configuration

Transducer Identity: 1000000

Model: TMS1000

Serial Number: 0000

Sensitivity (mV/V): 0.010

Capacity (N.m): 0.000

Cancel Delete Save

Delete Transducer

Select **Delete** on the Transducer Configuration screen.

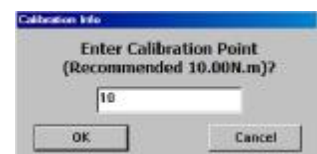
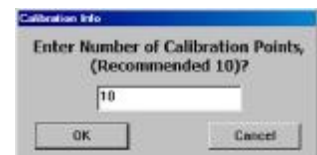
- All data relating to the selected transducer will be deleted.
- If the currently connected transducer is deleted a message will be displayed and WIZARD PLUS will be set to 'None Selected'.
- A transducer must be selected before WIZARD PLUS can be used again.



Note: Transducer calibration is a specialist application and requires the use of a precision beam and weight set, preferably located in a controlled environment free from vibration. Inaccurate equipment will result in an inaccurate transducer calibration and therefore, inaccurate results from that transducer and all tools checked using it.

Transducer calibration is only essential where the Sensitivity (mV.V) value is not known.

- Ensure that WIZARD PLUS is in the correct Unit of Measurement for the transducer in question. If not, select from the **Unit** Menu.
- If the required transducer is not already configured, add it using a *nominal* mV/V sensitivity of say 2.000, then update using the following procedure.
(See **Add New Transducer**)
- From the WIZARD PLUS Menu select **Config** then **Transducer**. A password may be required
- From the Transducer menu choose **Select** then pick the transducer to be calibrated from the list of those configured. Re-select **Transducer** from the Config menu, then **Calibrate**.
- Enter the number of calibration points. 10 is recommended, equally spaced at 10% intervals up to the maximum capacity of the transducer. A different number of points may be necessary to take account of the available beam / weights.
- Press **OK** to confirm.
- Enter the **First Calibration Point** – 10% of the transducer capacity will be prompted but this may be overwritten. Again, this may be necessary to take account of the available beam / weights.

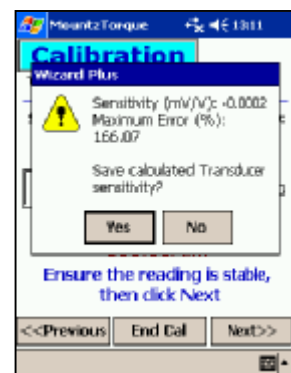
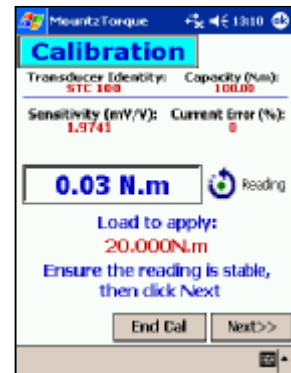


Continued on Next Page>>

Continued from **Calibrate Transducer - 1**

Calibration Screen

- Apply the load to the transducer gently.
In order to continuously calculate the transducer load to the highest possible accuracy, the WIZARD PLUS display has been slowed down and only updates every 2 seconds.
The reading may be considered as stable when there has been no change to the displayed value for 10 seconds. When stable press **Next>>**
- Enter the next calibration point, then repeat steps 7 - 9 of the procedure until all points have been completed.
- When all readings have been taken, press **End Cal.**
- The calculated Transducer Sensitivity and Maximum error are displayed.
Press **Yes** to save calibration and update the Transducer Configuration data for the selected transducer.
Press **No** to exit Calibration without saving data.



Also see **Transducer Calibration - 1** Page 3.5

WIZARD PLUS – Add New Tool



In order to use the SPC and ISO 6789 Calibration features of WIZARD PLUS it is necessary to configure tools.

- Set the correct unit of measurement in the **Unit** menu.
 - From the WIZARD PLUS Menu select **Config**
 - From the Config menu select **Tool** then **Add New**
 - In the Tool Configuration screen enter a name in the **Tool Identity** box. This name will identify this Tool throughout WIZARD PLUS.
(Maximum 10 characters)
 - Complete the **Serial Number** and **Range** (maximum capacity) boxes.
 - Enter the target or nominal value in the **Preset** box. This must be less than the range entered above !
If there is not a target value uncheck the Preset box. If a Preset has been entered, the Tolerance box must be completed.
 - Choose if the tolerance is to be expressed as a **percentage** or as specified **limits**. The button is a toggle.
Percent allows entry of the permitted deviation as a percentage of the preset value. These percentages are automatically converted to limits by the WIZARD PLUS software.
Limits allow entry of the actual limit values.
- Note:** WIZARD PLUS will accept limits greater than the maximum range of the tool, but a warning screen is displayed to alert the User to this fact. The User then has the option to accept or change the limit.*
- A **Text Box** is available within Tool configuration to add notes relating to the tool in question.
 - 'Cal Data' may be entered. This is used for testing to ISO 6789 standards. (WIZARD PLUS "Super" Version Only See Page 4.2).
 - When complete press **Save**.

The screenshot shows a 'Tool Configuration' dialog box with the following fields and controls:

- Tool Identity: [Text Input]
- Serial Number: [Text Input]
- Range (N.m): [Text Input]
- Preset (N.m): [Text Input]
- Tolerance: [Text Input]
- Limit (N.m): [Text Input]
- +Limit (N.m): [Text Input]
- Buttons: Preset, Limits
- Bottom Buttons: Tool Box, Cancel, Save

The number of tool details that may be saved is only limited by the memory capacity of the PC or PDA



Enter additional Tool Configuration Data to allow testing in accordance with International Standard ISO 6789:2003
Note: Only available on the “Super” version of WIZARD PLUS

- Within the ISO 6789 Standard, each type of hand operated torque tool is identified by a ‘**Tool Type**’ and ‘**Class**’. These describe the nature of the tool and how it is to be tested.
 - ‘Type I’ describes ‘Indicating torque tools.
 - ‘Type II’ describes Setting torque tools.
- Reference should be made to the Standard before configuring tools.
- From the Tool Configuration Screen, select ‘**CalData**’
- Tick the On/Off box at the top of the ISO 6789 window.
- Click on the correct Type and Class buttons for the tool in question.



WIZARD PLUS – Select a Tool



Only Configured Tools will appear in the Tool Menu.

- From the WIZARD PLUS Menu select **Tool**
- From the Tool menu choose **Select** then pick the required Tool from the list of those configured.

The Tool List is searchable – type the start of the Tool Identity in the ‘Find a Tool’ box.

- To disable all preset and tolerance values, choose **‘Non Specific’**. This allows ‘random’ readings to be taken up to the maximum capacity of the transducer connected.

Note: Test results cannot be calculated using ‘None Specific’.

To add a new tool to the menu, see **Add New Tool** - Page 4.1





Ensure that the correct Tool is selected before Editing or Deleting.

Edit Tool

- From the WIZARD PLUS Menu select **Config** then **Tool**.
- From the Tool menu choose **Edit** then pick the required Tool from the Tool List. The Tool List is searchable – type the start of the Tool Identity in the ‘Find a Tool’ box.
- All details may be edited with the exception of the Serial Number. If the Serial Number needs to be changed, the Tool must be deleted and re-entered.
- Press **Cancel** to cancel changes or **Save** to update the information.

Tool Configuration

Tool Identity: T001 25

Serial Number: 123456789

Range (N.m): 25.000

Preset (N.m): 15.000

Tolerance:

-Tolerance (%): 4.000

+Tolerance (%): 4.000

Present Delete

Tool Box Cal Data

Cancel Delete Save

Delete Tool

- Select **Delete** on the Transducer Configuration screen.
- All data relating to the Tool will be deleted.
- If the currently selected tool is deleted a message will be displayed and WIZARD PLUS will set the current tool to ‘Non Specific’.

Note: ‘Non Specific’ cannot be edited or deleted !

WIZARD PLUS – Select Unit of Measurement



Changing the Unit of Measurement changes all functions and screens within WIZARD PLUS to the new unit.

- From the WIZARD PLUS Menu select **Unit**.
- Select the required **Torque** unit from the list or press **Force** to select a force unit.

The currently selected Unit of Measurement is highlighted with a black dot in the left hand margin ('N.m' in this case).



All WIZARD PLUS functions are displayed in the currently selected Unit of Measurement

All commonly used Torque and Force units are supported.

Torque Units

- cN.m = centi-Newton metres
- dN.m = deca-Newton metres
- N.m = Newton metres
- ozf.in = ounce force inches
- lbf.in = pound force inches
- lbf.ft = pound force feet
- gf.cm = gramme force centimetres
- kgf.cm = kilogramme force centimetres
- kgf.m = kilogramme force metres

Force Units

- N = Newtons
- kN = kilo-Newtons
- lbf = pound force
- gf = gramme force
- kgf = kilogramme force

WIZARD PLUS – Modes of Operation



A Transducer must be selected before entering a Mode of Operation.

Seven Modes of Operation are available on WIZARD PLUS:

- **Track**
 - **Peak – Manual**
 - **Peak – Auto**
 - **1st Peak – Manual**
 - **1st Peak – Auto**
 - **Power Tool – Manual**
 - **Power Tool - Auto**
- To view the Modes of Operation, select **Mode** on the WIZARD PLUS Menu.
 - Select the required mode from the list.
- Note:** All operational modes, except Track, have a choice of either 'Manual' or 'Auto'. This determines how the readings are cleared and how readings are saved in **Test Mode**.

The currently selected mode is denoted by a black dot next to the description.



Also see **Sleep** and **Sleep Setup** - Page 8.2

WIZARD PLUS – Track Mode



Track Mode may be used to measure the actual load on the transducer where capture of a Peak is not important.

- The current load on the transducer is 'Tracked' in the **Track Window**. If there is no load on the transducer, the display will show a zero reading.
- The readings are colour coded according to the preset value and limits configured.
Blue = low, **Green** = In limit and **Red** = High.

Note: Data cannot be saved from Track Mode during a Test.



Direction Arrow

A Direction Arrow appears next to the Track Window in all operational modes. This denotes either clockwise or anti-clockwise torque.

Also See:

- Peak Modes** - Page 6.3
- 1st Peak Modes** - Page 6.5
- Power Tool Modes** - Page 6.7
- Test Mode** - Page 7.1



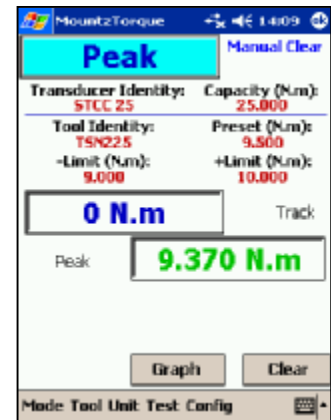
Peak mode should be used to check 'Slipping' Torque Screwdrivers and Wrenches.

Two Peak modes are available –

'Peak-Manual' and
'Peak-Auto'.

A torque / time **Graph** is available in 'Peak-Manual' Mode

- The current load on the transducer is 'Tracked' in the **Track Window**. If there is no load on the transducer, the display will show a zero reading.
- The Peak load applied to the transducer is shown in the **Peak Window**.
- Once a peak reading has been achieved, the screen is cleared by pressing the '**Clear**' button if Manual Clear is selected. The reading will clear automatically if 'Auto Clear' is selected.
- The readings are colour coded according to the preset value and limits configured.
Blue = low, **Green** = In limit and **Red** = High.



Also See:

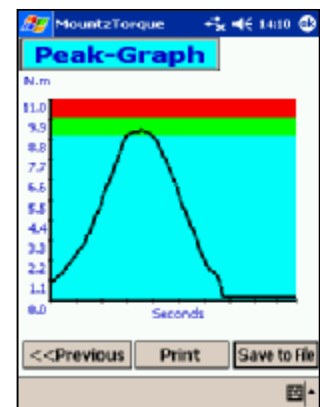
Peak Graph - Page 6.4
1st Peak Modes - Page 6.5
Power Tool Modes - Page 6.7
Test Mode - Page 7.1
Auto Save/Clear Time - Page 8.4



The Peak Graph is only available in the 'Peak-Manual' mode.

Peak Graph is accessed by pressing the Graph button
After taking a reading in Peak – Manual mode.

- The **Peak Graph** shows a curve of the actual torque applied (vertical axis) against time (horizontal axis).
- The graph automatically scales to suit the data received. The duration of the graph can be anything up to 9 seconds.
- The graph is colour coded according to the preset value and limits configured.
Blue = low, **Green** = In limit and **Red** = High.
- A 'screen shot' of the Peak Graph can be sent direct to a printer.
Note: PDA requires a printer equipped with an infra-red port.
- The graph data can be **Saved to File** and is automatically converted to Microsoft Excel format.
- The **<<Previous** button returns WIZARD PLUS to the Peak screen without saving data.



Also see:

- | | |
|--------------------------------------|-------------|
| Graph Setup | - Page 8.3 |
| 1st Peak Graph | - Page 6.6 |
| Transfer to Torqueleader Data | - Page 7.10 |

WIZARD PLUS – 1st Peak Modes



1st Peak mode should be used to check 'Clicking' and 'Breaking' Torque Screwdrivers and Wrenches.

Some torque tools (notably "clicker" wrenches) tend to cause an over-run or impulse as the mechanism operates, often leading to the actual torque applied being much higher than expected.

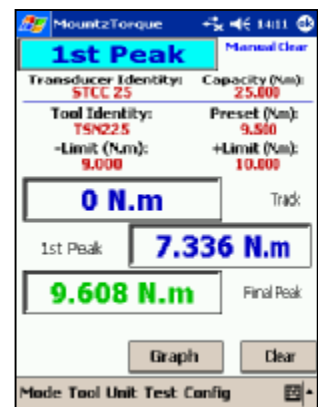
1st Peak Mode displays both the 1st Peak as the mechanism breaks, and the Final Peak or maximum torque applied.

Two 1st Peak modes are available –

'1st Peak-Manual' and
'1st Peak-Auto'.

A torque / time **Graph** is available in
'1st Peak-Manual' Mode

- The current load on the transducer is 'Tracked' in the **Track Window**.
- The 1st Peak achieved as the tool mechanism 'clicks' is shown in the **1st Peak Window**.
- The Maximum load applied is shown in the **Final Peak Window**. With a 'click' tool this may be noticeably higher than the 1st Peak.
- Once a peak reading has been achieved, the screen is cleared by pressing the **'Clear'** button if Manual Clear is selected. The reading will clear automatically if 'Auto Clear' is selected.
- The readings are colour coded according to the preset value and limits configured.
Blue = low, Green = In limit and Red = High.



Also See: **1st Peak Graph** - Page 6.6

Power Tool Modes - Page 6.7

Test Mode - Page 7.1

Auto Save/Clear Time - Page 8.4

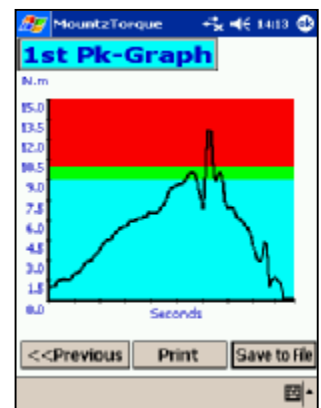
WIZARD PLUS – 1st Peak Graph



The 1st Peak Graph is only available in the 'Peak-Manual' mode.

1st Peak Graph is accessed by pressing the Graph button after taking a reading in 1st Peak – Manual mode.

- The **1st Peak Graph** shows a curve of the actual torque applied (vertical axis) against time (horizontal axis). The example shows clearly the 1st and Final peaks of a 'Click' wrench.
- The graph automatically scales to suit the data received. The duration of the graph can be anything up to 9 seconds.
- The graph is colour coded according to the preset value and limits configured.
Blue = low, Green = In limit and Red = High.
- A 'screen shot' of the Peak Graph can be sent direct to a printer. Note: PDA requires a printer equipped with an infra-red port.
- The graph data can be **Saved to File** and is automatically converted to Microsoft Excel format.
- The <<**Previous** button returns WIZARD PLUS to the Peak screen without saving data.



Also see:

Graph Setup	- Page 8.3
1st Peak Sensitivity	- Page 8.5
Peak Graph	- Page 6.4
Transfer to MountzTorque Data	- Page 7.4



Power Tool mode should be used to check Electric, Hydraulic and Pneumatic powered Torque tools. This may include Impulse tools *with a suitable Transducer.*

Two Power Tool modes are available –

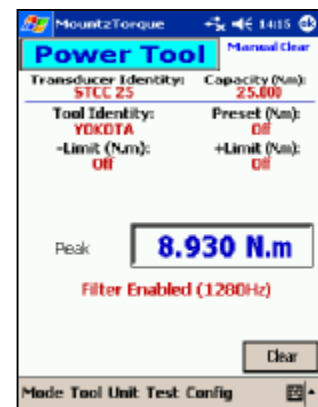
'Power Tool-Manual' and
'Power Tool-Auto'.

A torque / time **Graph** is available in
'Power Tool-Manual' Mode

- The Peak load applied to the transducer is shown in the **Peak Window**.
- Once a peak reading has been achieved, the screen is cleared by pressing the '**Clear**' button if Manual Clear is selected. The reading will clear automatically if 'Auto Clear' is selected.
- The readings are colour coded according to the preset value and limits configured.
Blue = low, **Green** = In limit and **Red** = High.
- A **Filter** is enabled in Power Tool Mode. The filter is used to remove any unwanted noise, interference and electrical spikes caused by the impulsing of the power tool that could mask the true torque value.

The default Filter setting is 500Hz, but this may be changed in the Config Menu. Values between 128Hz and 3600Hz can be selected.

The currently selected filter value is displayed on screen when in Power Tool modes.



Continued on page 6.8 >>

WIZARD PLUS – Power Tool Graph

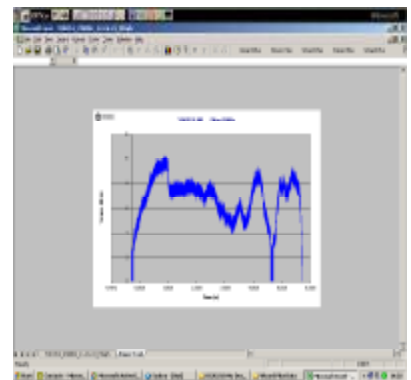


The Power Tool Graph is only available in the 'Power Tool-Manual' mode.

The Power Tool Graph data is saved by pressing the Graph button after taking a reading in Power Tool – Manual mode.

A Power Tool Graph can only be viewed in Microsoft Excel. The graph cannot be viewed within the WIZARD PLUS software or on a PDA.

- The **Power Tool Graph** shows a curve of the actual torque applied (vertical axis) against time (horizontal axis).
- The duration of the graph is dependent on the Filter setting selected.
The graph has a duration of approximately 10 seconds with a 200Hz filter and approximately 4 seconds with a 3600Hz Filter.



See Page 7.10 for details of the data transfer to MountzTorque Data.

Please note that Power Tool Graph files contain up to 65,000 readings and may take up to 60 seconds to save, particularly when using a PDA.

Continued on page 6.9 >>

Continued from Page 6.8

Using Power Tool Modes

- Power Tool checking is usually achieved in one of two ways:

1. Using a **Rotary Transducer** mounted between the power tool and the fastener to be tightened.

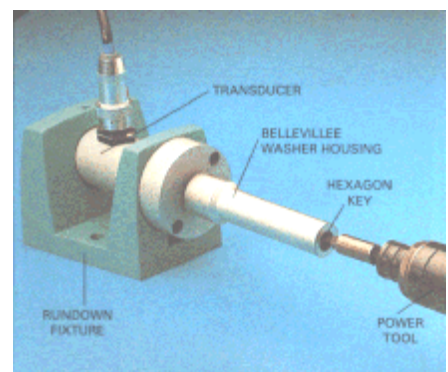
This is the most accurate method of power tool checking as the actual characteristics of the joint in question are used.

In this case, readings may be taken using 'Power Tool-Auto' Mode, but 'Power Tool-Manual' Mode is usually found to be more convenient.



2. Using a **Static Transducer**, mounted in a Bench Stand and used with a '**Rundown Assembly**'.

This method typically uses different combinations of 'Belleville Washers', compressed by the action of the power tool to 'simulate' the joint conditions.



*It is strongly recommended that, where an input screw is wound in and out, readings should only be taken using '**Power Tool-Manual**' mode.*

(Using Power Tool-Auto mode may inadvertently store the 'wind-out' torque value during a test)

Continued on page 6.10 >>

Continued from Page 6.9

General Notes on Power Tool Testing

1. **Background**

It has been established that the torque *delivered* to a joint by a power tool will depend on the **type of power tool** and the **type of joint** being tightened.

2. **Measuring Delivered Torque**

This can be done by either measuring the torque during application using a Rotary Transducer in-line, connected to an Analyser that has previously been set-up (see below) for the type of joint and type of power tool in use, or by measuring the tightness of the joint, following the tightening process.

3. **Measuring the Tightness of Previously Tightened Joints**

Traditionally 3 types of test are used to establish the original tightening torque applied to a joint. They are :

- The **Just Move** test, whereby additional torque is applied to a previously tightened fastener using a measuring electronic or dial torque wrench and the torque at which the fastener just starts to move is noted.
This method is not theoretically fully correct, as “stiction” has to be overcome to induce the fastener to move - however practically the **Just Move** test is a tried and trusted method for hard joints.
- The **Loosening** test, whereby the relationship between loosening torque and original tightening torque is previously established, and the test result is then compared to the established figure.
This method may not be suitable for soft joints with members that compress during tightening.

Continued on page 6.11 >>

Continued from Page 6.10

General Notes on Power Tool Testing

The **Marking** test, whereby the position of a tightened fastener is noted, the joint is then loosened and re-tightened with a measuring electronic or dial torque wrench to the original mark and the torque noted. This method may not be suitable for soft joints with members that permanently compress during initial tightening.

It should also be realised that "**joint relaxation**" will occur with all types of joints

That is, there is an apparent reduction in the initial torque applied to a joint over time.

The degree of joint relaxation will depend on:

- the type of joint
- the speed of initial tightening
- and the time interval between initial tightening and subsequent measurement.

4. **Electronic Torque Analysers**

To measure the amount of torque being delivered during the tightening process, or to directly measure the out-put from a power tool using an **Electronic Torque Analyser**, it is necessary **to establish the most appropriate Filter setting for the power tool and joint.**

Note - all types of power tools produce extraneous "electronic noise" and "spikes" of energy, which can mask the true torque being delivered by the power tool.

It is therefore necessary to "filter-out" the extraneous electronic noise and energy spikes to read only the correct true torque being delivered.

Electronic engineers have developed various different methods and levels (expressed as Hz) of Filtering and the **most appropriate level of filtering has to be established for each power tool and joint before meaningful results can be obtained.**

Continued on page 6.12 >>

Continued from Page 6.11

General Notes on Power Tool Testing

The recommended method to establish the most appropriate level of Filtering is typically by trial and error!

5. A Two-Stages Procedure is required :

Stage 1 -

Setting the Power Tool to deliver the required torque to the joint

- (i) Using the power tool, tighten the joint.
- (ii) Using one of the 3 accepted methods of checking the tightness of previously tightened joints described above, check the tightness of the joint
- (iii) Adjust the power tool as necessary and repeat steps (a) and (b) until the required torque is being *consistently* delivered to the joint.

Stage 2 -

Checking the Power Tool using an Electronic Torque Analyser

Using an In-Line Rotary Transducer

- (i) Introduce the Rotary Transducer into the power train and tighten the joint noting the Analyser reading on completion.
- (ii) Adjust the Filter setting on the Analyser and repeat step (i) above.
- (iii) Continue to repeat steps (i) and (ii) above until the Analyser reading closely matches the torque actually being delivered by the power tool as established in Stage 1 above.

Continued on page 6.13 >>

Continued from Page 6.12

General Notes on Power Tool Testing

Using a Static Transducer with Run-Down Fixture

- (i) Use the Power tool to tighten the simulated joint of the Run-Down fixture. (Note - it is possible to adjust the configuration of some Run-Down fixtures to simulate different hardness / softness of joints. The same configuration should be used for each test to ensure consistency of procedure.)
- (ii) Using one of the 3 accepted methods of checking the tightness of previously tightened joints described above, check the tightness of the simulated joint.
- (iii) Adjust the Filter setting on the Analyser and repeat steps (i) and (ii) above.
- (iv) Continue to repeat steps (i) to (iii) above until the Analyser reading closely matches the torque actually being delivered by the power tool as established in Stage 1 above.

It is recommended that several tightening processes are carried out at each Filter setting to obtain a consistent torque value.

In order to establish the most appropriate Filter setting for Power Tool and Joint, it is recommended that the "trial and error" procedure starts at a higher Filter frequency setting, which is reduced in 500Hz steps until near comparable torque results are obtained. Tests steps can then be decreased to say 100Hz steps.

Continued on page 6.14 >>

Continued from Page 6.13

General Notes on Power Tool Testing

Graphing Filter setting against Torque, will assist the process of establishing the most appropriate Filter setting for a particular Power Tool being used on a particular Joint.

It should be realised that if any of the circumstances change, then it will be necessary to establish a new Filter setting.

Also See:	Peak Modes	Page 6.3
	1st Peak Modes	Page 6.5
	Power Tool Modes -1	Page 6.7
	Test Mode -	Page 7.1
	Filter Set up -	Page 8.1
	Auto Save/Clear Time -	Page 8.4

WIZARD PLUS – Test Modes



'Test' Allows the user to save multiple readings from the Mode selected.

Two Test Mode options are available

- SPC Test
- ISO 6789 Test (WIZARD PLUS “Super” Only)



SPC Test

- This test is designed to capture a series of readings (with no restriction on the quantity collected).
- The data collected is analysed and displayed in an SPC (Statistical Process Control) format.
- This data can be reviewed on screen within the WIZARD PLUS System in both PocketPC and Windows formats.
- The data collected is saved as a .csv file for use within Microsoft Excel.

Go to Page 7.2

ISO 6789 Test

- This test is designed to calibrate a Torque Tool in accordance with the requirements of International Standard ISO 6789:2003
- Additional Tool configuration Data is recorded to allow compliance with the Standard and traceability of the data collected.
- The data collected becomes a fully traceable Certificate of Calibration for the tool tested.
- The results collected are not directly viewable within the WIZARD PLUS System but are saved as a Rich Text Format document for use within Microsoft Word.

Go to - Page 7.7



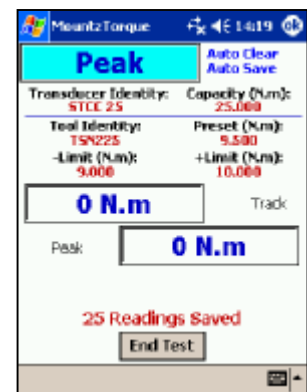
In 'SPC Test' the data collected is analysed and displayed in an SPC (Statistical Process Control) format.

- Select required Mode of Operation from the **Mode Menu**.
- Configure all other settings such as 1st Peak sensitivity and Auto reset/Clear time where applicable. These cannot be changed during a Test.
- Ensure that the tool to be tested is correctly adjusted before commencing the Test.
- Select **SPC Test** from the PETA Menu.
- Confirm that all settings are OK.
- Enter the **Test Identity**. This will form the first Part of the results filename so a consistent format is important (Typically the serial number or unique identity of the tool is used).



Test uses the screen of the chosen Mode.

- Take reading.
A *minimum* of 25 saved readings are necessary to calculate *valid* SPC data.
- Once a reading has been achieved, the result may be saved. In 'Manual' modes data is only saved when the '**Save**' button is pressed.
In 'Auto' modes, all readings are saved automatically.
- An on-screen counter maintains a record of the number of readings saved in the current test.
- When the required number of readings have been saved, press **End Test**.
- Confirm that the test should end. Screen changes to **Test Data**



Go to **Test Data** - Page 7.3



**Test Data gives the results from an SPC Test.
It is only accessed after a Test has been completed.**

Test Data gives a listing of the readings saved, colour coded against the configured preset value and limits.

Any 'rogue' readings, false peaks etc. can be deleted at this point.

Reading	Value (N.m)	Limits
23	9.601	OK
24	9.275	OK
25	9.539	OK
26	9.779	OK
27	20.813	X
28	9.442	OK
29	9.706	OK
30	9.444	OK

Double click Invalid readings to delete

Exit Results>>

The table has three columns:

Reading

Reading number, listed in the order that they were saved.

Value: The Torque of Force values saved during the test.

Limits: The status of the reading taken, compared to the configured preset target value and limits.

Good (Green) readings = OK

Bad (Red or Blue) readings = X

Delete Saved Readings

'Rogue' readings can be deleted by double clicking on the reading in question.

The reading number will remain in the list but the value will display "Deleted".

Note: Readings cannot be 'Un-deleted'.

Once the Test Data has been verified, press **Results>>** to calculate SPC Data on the readings remaining.

Go to **SPC Data** - Page 7.4



SPC Data gives the Statistical results from an SPC Test performed in WIZARD PLUS. It is only accessed after a Test has been completed and the Test Data verified.

SPC Data is a listing of Statistical results for the data saved in 'Test'.

The results are calculated from the data in the 'Test Data' screen. Any deleted readings are ignored.

- A 'screen shot' of the SPC Data can be sent direct to a printer by pressing **Print**
Note: PDA requires a printer equipped with an infra-red port.
- **Save** - The SPC Data can be saved to file and is automatically converted to Microsoft Excel format.
- **<<Back** – Return to the Test Data screen to remove further 'rogue' readings.
- **Exit** – Exit Test without saving data.

SPC Data	
Number of Readings:	29
Average (Mean):	9.54
Standard Deviation:	0.15
Maximum Reading:	9.78
Minimum Reading:	9.19
Spread (Min - Max):	0.59
Upper Specified Limit:	10.00
Lower Specified Limit:	9.00
Repeatability about Mean:	-4.82%
Accuracy about Nominal:	5.21%
Cp:	1.09
Cpk:	1.01

<<Back Print Save Exit

Also see:

- Test Data** - Page 7.3
- Data Presentation in MS Excel** - Page 7.5
- Transfer to MountzTorque Data** - Page 7.10

WIZARD PLUS – SPC Test – Data Presentation in 'MS Excel'

Continued from Page 7.4

- The saved SPC Test Data is accessed from the 'MountzTorque Data' Folder. (See page 7.10)
- Open the saved file (the filename will have an '_Test' suffix)
- The raw data collected is now displayed in Microsoft Excel.
- When the WIZARD PLUS software was loaded on to the PC it also updated Microsoft Excel with a WIZARD PLUS Button. Press this button to view a tidied version of the data presented on 5 Excel sheets including a control chart, histogram and distribution curve.
- Using the cut and paste function in excel, this data could be used in other documents.



Mountz Torque	Raw Data
1	100
2	105
3	110
4	115
5	120
6	125
7	130
8	135
9	140
10	145
11	150
12	155
13	160
14	165
15	170
16	175
17	180
18	185
19	190
20	195
21	200
22	205
23	210
24	215
25	220
26	225
27	230
28	235
29	240
30	245

Sheet 1
Raw Data

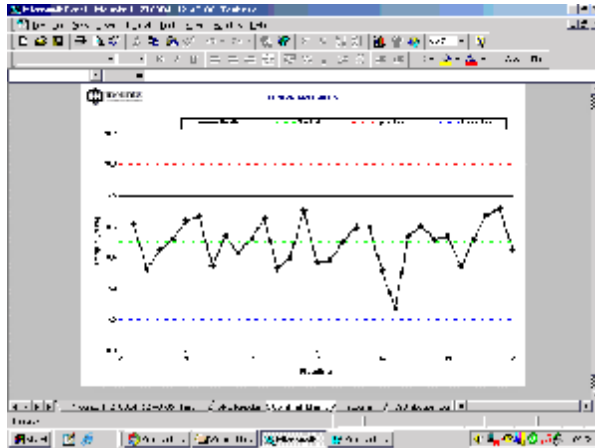
SPC Results	Mean	Standard Deviation	Upper Control Limit	Lower Control Limit
1	100	10	120	80
2	105	10	125	85
3	110	10	130	90
4	115	10	135	95
5	120	10	140	100
6	125	10	145	105
7	130	10	150	110
8	135	10	155	115
9	140	10	160	120
10	145	10	165	125
11	150	10	170	130
12	155	10	175	135
13	160	10	180	140
14	165	10	185	145
15	170	10	190	150
16	175	10	195	155
17	180	10	200	160
18	185	10	205	165
19	190	10	210	170
20	195	10	215	175
21	200	10	220	180
22	205	10	225	185
23	210	10	230	190
24	215	10	235	195
25	220	10	240	200
26	225	10	245	205
27	230	10	250	210
28	235	10	255	215
29	240	10	260	220
30	245	10	265	225

Sheet 2
SPC Results

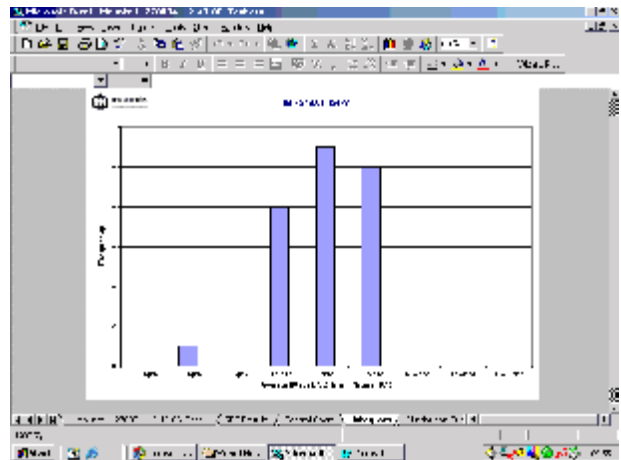
Continued on page 7.6

WIZARD PLUS – SPC Test – Data Presentation in 'MS Excel'

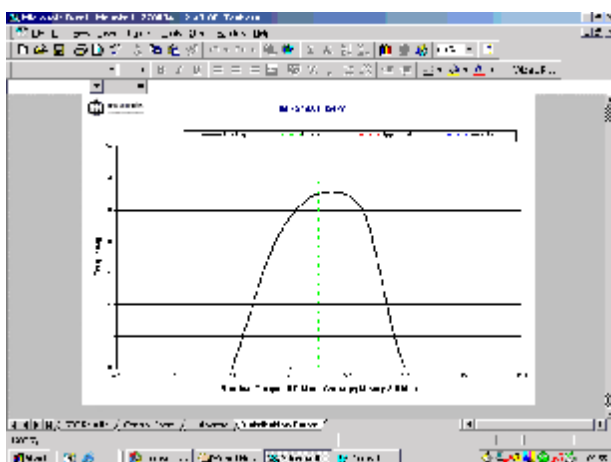
Continued from Pages 7.5



Sheet 3
Control Chart



Sheet 4
Histogram



Sheet 6
Distribution Curve

Go to **MountzTorque Data** - Page 7.10



'ISO 6789 Test' allows the User to create a Certificate of Calibration for Torque tools in accordance with the International Standard.

The ISO 6789 Test is only available on the “Super” version of WIZARD PLUS

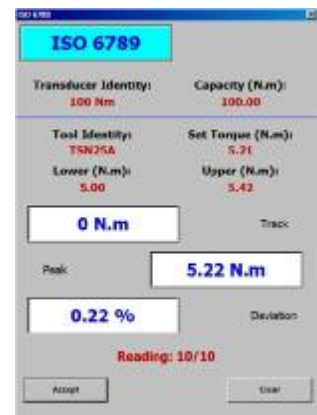
The procedure used for the test will be automatically selected according to the Type and Class of tool to be tested:

Procedure for ISO 6789 Type II, Class B, C, E & F 'Setting Type' torque tools, where a single torque value is tested.

- Ensure that the tool to be tested has been fully configured, including the Cal Data (Page 4.1 & 4.2)
- Select the correct tool from the **Tool Menu**.
- The tool to be tested should be correctly adjusted before commencing the Test and recording data.
- Select **ISO 6789 Test** from the WIZARD PLUS Menu.
- Enter the Calibrator's Identity
- Select either 'Auto' or 'Manual' saving of readings. 'Auto' will save all readings collected. 'Manual' will only accept readings within the specified tolerances.
- Enter Room Temperature.

Note: The Calibrators Identity and Temperature information will appear on the Calibration Certificate.

- Take required number of readings (5 or 10) following the prompts on screen.
- The mean torque value is calculated 'live' as readings are taken. The deviation of the current reading from the calculated mean is also displayed.
- When all readings have been collected, the Certificate of Calibration may be viewed from the MountzTorque Data folder in Microsoft Word format.



Continued on Next Page >>



‘ISO 6789 Test’ allows the User to create a Certificate of Calibration for Torque tools in accordance with the International Standard.

The ISO 6789 Test is only available on the “Super” version of WIZARD PLUS

The procedure used for the test will be automatically selected according to the type of tool to be tested:

Procedure for ISO 6789 Type I, Class A, B, C, D & E ISO 6789 Type II, Class A, D & G

Tools with a calibrated scale or dial, tested at nominally 20%, 60% and 100% of their full scale.

- Ensure that the tool to be tested has been fully configured, including the Cal Data (Page 4.1 & 4.2)
- Select the correct tool from the Tool Menu.
- The tool to be tested should be correctly adjusted before commencing the Test and recording data.
- Select ISO 6789 Test from the WIZARD PLUS Menu.
- Enter the Calibrator’s Identity
- Select either ‘Auto’ or ‘Manual’ saving of readings. ‘Auto’ will save all readings collected. ‘Manual’ will only accept readings within the specified tolerances.
- Enter Room Temperature.

Note: The Calibrators Identity and Temperature information will appear on the Calibration Certificate.

- Confirm first calibration point (screen prompts for 20% of full scale - but this can be overwritten to suit tool graduations).
- Repeat, collecting 5 torque readings at each calibration point, following the prompts on screen.
- When all readings have been collected, the Certificate of Calibration may be viewed from the MountzTorque Data folder in Microsoft Word format.



Continued on Next Page >>

WIZARD PLUS – ISO 6789 Test – Data Presentation in 'MS Word'



The 'ISO 6789 Test' Certificate is produced in Microsoft Word format.

The ISO 6789 Test is only available on the “Super” version of WIZARD PLUS

- The saved ISO 6789 Test Data is accessed from the 'MountzTorque Data' Folder. (See page 7.10)
- Open the saved file (the filename will have an '_ISO' suffix)
- The raw data collected is now displayed in Microsoft Word.
- When the WIZARD PLUS software was loaded on to the PC, it also updated Microsoft Word with a **WIZARD PLUS Button**. Press this button to view a tidied version of the data already formatted into a **Certificate of Calibration**.



Certificate for “Calibrated Scale” or
Dial type Torque Tool

Certificate for “Setting” type Torque Tool

Mountz Inc.
1090 North 11th Street
San Jose
California 95131
USA
Tel: +1 408 292 2734
Fax: +1 408 292 2735
email: mountz@mountztorque.com
web: www.mountz.com

Certificate of Calibration

Model:	TGR 25	Serial Number:	1100030
Max.Capacity:	25.000	Units:	Nm
Temp:	20°C	Trade/Classification:	Type: 2
Inspector:	DGA TG CA Asia	(ISO 9000:2002)	Cert: A

Set Torque	Upper UPM	Lower UPM	Actual Readings				
6.000	4.800	6.200	5.281	6.030	6.548	6.548	6.932
	deviation 14.00%		4.3%	0.2%	4.2%	+1%	1.8%
10.000	14.400	15.600	16.907	16.349	16.346	16.190	12.993
	deviation 14.00%		9.5%	3.8%	3.8%	7.8%	19.8%
25.000	24.000	26.000	25.887	24.642	24.620	25.755	2.879
	deviation 14.00%		1.7%	1.3%	1.3%	0.2%	80.1%

The limits shown and the test equipment used for this Calibration comply with the requirements of:

ISO 6789:2002

The maximum uncertainty of measurement of the test equipment is ±1%

International Traceability through Calibration Laboratories

Torque Model: WIZARD PLUS Transducer: Range 25 K5195-020
Transducer Serial Number: 49389
Date of Calibration: 19/04/2004 Head of Calibration:

Mountz Inc.
1090 North 11th Street
San Jose
California 95131
USA
Tel: +1 408 292 2734
Fax: +1 408 292 2735
email: mountz@mountztorque.com
web: www.mountz.com

Certificate of Calibration

Model:	TGR 25	Serial Number:	1100030
Max.Capacity:	25.000	Units:	Nm
Temp:	20°C	Trade/Classification:	Type: 2
Inspector:	DGA TG CA Asia	(ISO 9000:2002)	Cert: C

	Actual Readings	Deviation from Mean Torque
Mean Torque:	6.64	5.5%
	6.67	0.5%
	6.41	-3.6%
Lower Limit:	6.42	-3.8%
	6.4	-3.9%
Upper Limit:	6.20	-7.2%
	5.99	-10.8%
	5.44	-18.8%
	5.24	-21.1%
	5.1	-23.2%

The limits shown and the test equipment used for this Calibration comply with the requirements of:

ISO 6789:2002

The maximum uncertainty of measurement of the test equipment is ±1%

International Traceability through Calibration Laboratories

Torque Model: WIZARD PLUS Transducer: Range 25 K5195-020
Transducer Serial Number: 49389
Date of Calibration: 21/04/2004 Head of Calibration:



All data saved when using the WIZARD PLUS system is accessed from the 'MountzTorque data' folder.

The location of the MountzTorque Data folder differs between the 'Windows' and PocketPC versions of WIZARD PLUS.

Windows PC/Laptop Version

- From the Start Menu, Select '**Programs**', then '**MountzTorque**'.
- Select the "**Wizard Plus Data**" folder.
(Alternatively, use the shortcut icon on the desktop).

This is where all of the WIZARD PLUS Data is saved.



Double-click the required file to open.

PDA Version

- Ensure that the PDA is docked / connected to the PC and that Microsoft ActiveSync has synchronised files before following this procedure.
- When the PDA was initially set up and a partnership initiated using Microsoft ActiveSync, a folder would have been automatically created on the desktop where files could be shared between the two computers.

This is usually called "Pocket_PC My Documents"
When the PDA is docked to the PC and ActiveSync synchronises, it transfers any saved Graphs and Test Data from WIZARD PLUS.



- Open the "Pocket_PC My Documents" folder on the desktop. This contains the "Wizard Plus Data" folder.



Double-click the required file to open.

Continued on page 7.11 >>

WIZARD PLUS- Mountz Inc Data 2



All data saved when using the WIZARD PLUS system is accessed from the 'MountzTorque data' folder.

Four types of data can be saved within the WIZARD PLUS system:

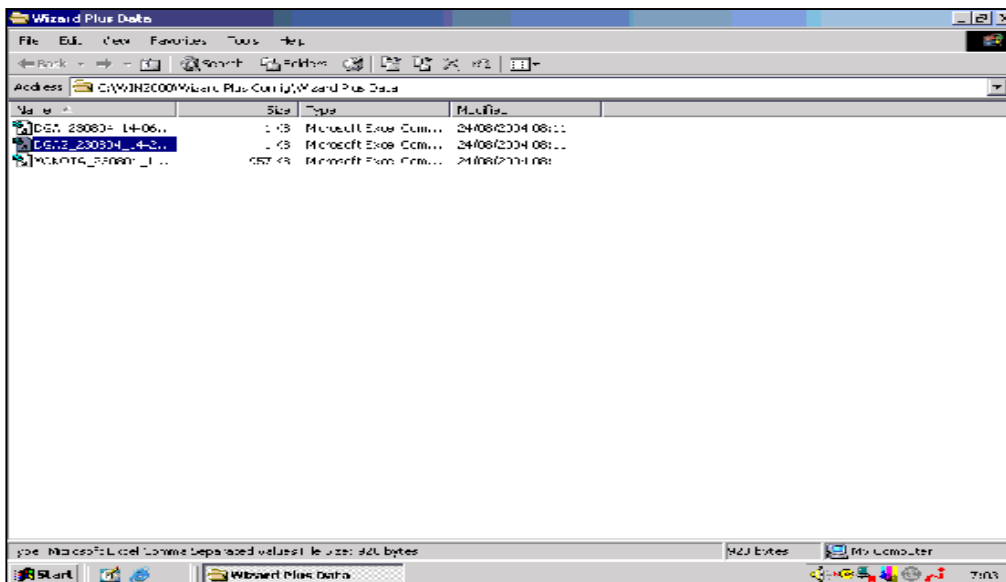
- Graph Data – filename suffix '_Gph'
- Power Tool Graph – filename suffix '_PtGph'
- SPC Test – filename suffix '_Test'
- ISO 6789 Test – filename suffix '_ISO'

WIZARD PLUS creates a unique 'intelligent' filename for each file saved. In all cases, this includes the date and time.

For example:

"TSN25_160904_14-32-26_Gph"

This is a graph, using tool TSN25,
saved on 16th September 2004 at 14:32:26.



WIZARD PLUS – Filter Setup



Change the Filter Value (in Hz) used in Power Tool Modes

- From the WIZARD PLUS Menu select **Config**.
- From the Config Menu select **Filter**.
- Choose either **500 Hz** or **Manual**. If Manual is chosen, the Hz value must be entered in the box.
 - **Manual** - The filter value in Hz must be manually entered by the operator. Values between 128Hz and 3600Hz are accepted.
- Press **OK** to confirm or **Cancel** to exit.



Note: The currently selected Filter setting is shown in Power Tool modes as a reminder.



Save battery power by setting up the Sleep Mode

Sleep

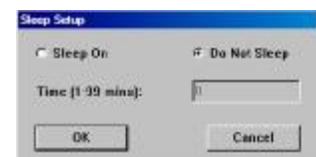
- The Sleep screen is displayed when the power saving 'Sleep' mode is activated. While 'sleeping', the transducer is powered down.
- A reminder of the current (last used) settings is displayed when in 'sleep'.
 - Transducer Identity
 - Transducer Capacity
 - Tool Identity



Sleep can be manually selected from the Mode menu.

Sleep Setup

- Allows the operator to select the amount of time before the program 'Sleeps' to conserve battery life when used on a Laptop / PDA.
- Choose between 'Do Not Sleep' and a maximum of 99 minutes.



Exiting Sleep Mode

- To exit Sleep Mode, “click” the screen on a Desktop or Laptop PC, “tap” the screen on a PDA.

WIZARD PLUS – Graph Setup



Change the duration of the Peak Graph and 1st Peak Graph

- From the WIZARD PLUS Menu select **Config**.
- From the Config Menu select **Graph Setup**.
- Choose either **Timed** or **Auto**. If timed is chosen, the duration must be entered in the Time box.
 - **Timed** - The Graph will display the output of the transducer for the selected duration. (1-9 seconds after the first application of load)
 - **Auto** - The Graph duration will automatically adjust to suit the actual data received, up to a maximum of 9 seconds.
- Press **OK** to confirm or **Cancel** to exit.





Auto Save/Clear Time is only applicable to ‘Peak - Auto’ and ‘1st Peak - Auto’ Modes.

- From the WIZARD PLUS Menu select **Config**.
- From the Config menu select **Auto Save/Clear Time**.
- Choose either **Timed** or **Auto**. If timed is chosen, the duration must be entered in the Time box.
 - **Timed** - When a reading has been achieved the result will be displayed on screen for the chosen time period (1-9 seconds). The display will then ‘clear’. The reading achieved will be saved automatically if in ‘Test’.
 - **Auto** - When a reading has been achieved the result will be displayed on screen until the next load is applied to the transducer. The reading is then ‘cleared’. The reading achieved will be saved automatically if in ‘Test’.
- Press **OK** to confirm or **Cancel** to exit.



WIZARD PLUS – 1st Peak Sensitivity



Change the sensitivity of the WIZARD PLUS software to detect a genuine 1st peak.

- From the WIZARD PLUS Menu select **Config**.
- From the Config menu select **1st Peak Sensitivity**.
A password may be required at this point.
- Choose from Low, Medium or High sensitivity.
 - **High** Sensitivity will clearly display the 'double peak' produced by a click wrench.
 - **Low** Sensitivity will reduce 'false peaks' caused by operator hesitation.
- Press **OK** to confirm or **Cancel** to exit.



Also see

1st Peak Modes - Page 6.5

WIZARD PLUS – Password Configure



Some elements of the Config Menu are Password protected. It is worthwhile setting a new password at the earliest opportunity.

- From the WIZARD PLUS Menu select **Config** then **Password Edit**
- WIZARD PLUS has a master password that overrides any other password entered. This is **Mountz**.
It is suggested that this master password is not made widely available !
- Enter **Mountz** in the 'Old' box.
(This is case sensitive)
- Enter the new password in the **New** box and then enter the new password again in **Confirm New**.
- If the New and Confirm New passwords differ, a prompt will appear to re-enter them correctly.
- The password only needs to be entered once during a WIZARD PLUS operating session. It unlocks all protected functions.

Old: *****
New: NEW
Confirm new: NEW
OK Cancel

The password unlocks the following functions:

- Add New Transducer,
- Edit Transducer,
- Calibrate Transducer
- 1st Peak Sensitivity

WIZARD PLUS – ISO 6789 Setup



Personalise the header of the ISO 6789 Certificate of Calibration

- From the WIZARD PLUS Menu select **Config** then **ISO 6789 Setup**.
- Complete the contact header information for the organisation issuing the Certificate of Calibration.

This information appears at the top of the certificate.

Company 1:	Mountz Inc
Company 2:	WizardPlus
Address 1:	80 North 11 Street
Address 2:	San Jose
Address 3:	California
Address 4:	USA
Tel:	408 292 2214
Fax:	408 292 2733
Web:	mountztorque.com
E-Mail:	mountztorque.com

mountz
The torque specialists

Mountz Inc.
1090 North 11th Street
San Jose
California 95112
USA

Tel: +1 408 292 2214
Fax: +1 408 292 2733

email: mountzsales@mountztorque.com
web: www.ctortorque.com

Certificate of Calibration

Model:	TSN 25	Serial Number:	1102020
Max.Capacity:	25.000	Units:	Nm
Temp:	20°C	Tool Classification:	Type: 2
Inspector:	DP	(ISO 6789:2003)	Class: C

		Actual Readings	Deviation from Mean Torque
Mean Torque	8.84	0.16	1.7%
		0.57	3.2%
Lower Limit	8.40	0.41	0.4%
		0.42	0.8%
Upper Limit	9.28	0.54	7.8%
		0.25	3.0%
		0.55	3.0%
		0.44	0.7%
		0.24	4.9%
		3.63	38.8%

The limits shown and the test Equipment used for this Calibration comply with the requirements of :

ISO 6789:2003

The maximum uncertainty of measurement of the test equipment is ±1%

International Traceability through Calibration Laboratories

Tester Model: WIZARD PLUS Transducer: flange 25 K51585-032
Transducer Serial Number: 48588
Date of Calibration: 21/04/2004 Head of Calibration:



Contact information regarding the WIZARD PLUS System

- From the WIZARD PLUS Menu select **Config**.
- From the Config menu select **Information**.

If you require any assistance, further information or you have any comments or suggestions regarding the WIZARD PLUS Personal Electronic Torque Analyser, please do not hesitate to contact us at the address below.

Please quote the WIZARD PLUS CF2 Card Serial Number and Version number of the software used in all correspondence.



Mountz Inc.
1080 North 11th Street
San Jose
California 95112
USA

Tel: ++1 408 292 2214
Fax: ++1 408 292 2733

email: mountzsales@mountztorque.com
web: www.ektorque.com



Verify the accuracy of readings taken through regular calibration of the CF2 card and Transducers

WIZARD PLUS CF2 Card Calibration

When the WIZARD PLUS CF2 card was initially supplied, a Card Calibration Certificate was included.

Each WIZARD PLUS CF2 Card has a unique serial number allowing traceability. The certificate details the performance of the specific card in question.

Approximately 11 months after the WIZARD PLUS CF2 card is first used, a reminder message will appear on screen, advising that re-calibration is recommended at 12-monthly intervals.

The User can elect not to have the message displayed again by ticking the box on screen. Otherwise the message will be displayed every 10th time WIZARD PLUS is used.

If re-calibration is required, return the card to Mountz Incorporated or the supplying Distributor, for checking and re-certification.

Approximately 11 months has elapsed since the CF2 card was first used. Recalibration is recommended every 12 months. Please contact Mountz Inc or your local Distributor

Don't remind me again

OK

Transducer Calibration

It is also important to recalibrate the Torque and Force Transducers used with the wizard plus system at regular intervals - usually every 12 months.

Please contact the Mountz Inc Sales Department for details of all re-calibration services.

Phone (US)

800 456-1828

Email

mountzsales@mountztorque.com



If a problem occurs with the WIZARD PLUS software, exit the application and re-start.
If the problem persists, please contact Mountz Incorporated.

Message: No MountzTorque Card Available

Symptoms: WIZARD PLUS will not operate

Cause: **'WIZARD PLUS CF2 Card'** has been removed or has become disconnected / damaged.

Remedy: Check that card is inserted correctly into the card slot. Try removing card and re-insert.
If a 'Jacket' is used, check connection with PDA

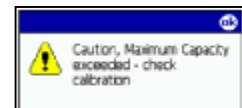
Note: Access to WIZARD PLUS will be denied if the **'WIZARD PLUS CF2 Card'** is not present.

Message: Maximum Capacity Exceeded

Symptoms: Sleep screen activated whenever a Mode is selected on WIZARD PLUS start-up.
Maximum Capacity message displayed

Cause: The transducer is not connected / communicating with the **'WIZARD PLUS CF2 Card'** .

Remedy: Connect transducer and check cable integrity.



Message: Maximum Capacity Exceeded.

Symptoms: Operation in current mode terminated. Capacity Exceeded message displayed.

Cause: The configured capacity of the transducer has been exceeded by more than 25%, potentially damaging the transducer through overloading.

Remedy: Examine transducer and equipment used to apply the load. Check calibration of transducer using calibrated beams / weights or return the transducer to a laboratory for checking.

